

ARNOLD ARBORETUM

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Broad-leaved Evergreens. The number of varieties of these plants which can be successfully grown in eastern Massachusetts is very small, and the botanical explorations of the last quarter of a century have made only a few additions to the list. Moreover, it is not probable that further exploration will greatly increase the number of these plants which can be grown in this climate, and probably the only hope of increasing it is in the production of new races of hardy Rhododendrons. A large portion of the broad-leaved evergreens which are hardy in the northern states belong to the Heath Family and cannot grow in soil impregnated with lime, so that the number of these plants available for the gardens of the middle west is confined to species of only three or four genera. Of the plants introduced from China only one or two Rhododendrons, four Barberries, a Viburnum, and possibly a Gaultheria can be kept alive here in the open ground, and the permanent value of some of them is not yet assured.

Evergreen Barberries. The four species of evergreen Barberries which are growing in the Arboretum are *Berberis Julianae*, *B. verruculosa*, *B. Gagnepainii*, *B. Sargentiana*. The last is the least hardy of these four plants and it can be kept alive here only in exceptionally sheltered positions, and, judging by our experience with it in the Arboretum, it will never become a good garden plant in this climate. Of *B. Julianae* there are a number of plants here in exposed positions where they have been growing for several years and have not suffered from heat or cold. It is a tall shrub with pale branches and spines, thick, dark green leaves, clusters of yellow flowers and blue-black

fruit. The Arboretum plants flowered for the first time last spring and have not yet produced fruit. *B. Gagnepainii* is also a tall shrub, with yellow-gray branchlets, long slender spines and narrow spiny leaves. The small flowers are in from three- to eight-flowered clusters and are followed by pear-shaped, bluish black fruit one-third of an inch long. This Barberry has flowered and fruited in the Arboretum this year for the first time. *B. verruculosa* is a dwarf spreading plant sometimes three feet high and broad, with slender, semipendent branches covered with many long slender spines and small, remotely spiny, toothed leaves dark green and very lustrous on the upper surface and silvery white below. The flowers are pale yellow and solitary or in pairs, and the fruit is about half an inch long and dark violet color or nearly black. This handsome little plant flowers irregularly through the summer and early autumn and has not yet ripened its fruit in the Arboretum. These three Chinese evergreen Barberries are with the other Chinese plants on the southern slope of Bussey Hill where they have been growing for three or four years in an exposed position.

Mahonias, as Barberries with pinnate leaves are now generally called, are not very hardy here with the exception of the Rocky Mountain *M. repens* which is a good plant in this climate and soon spreads by underground stems into broad clusters. The handsomer *M. Aquifolium*, the Oregon Grape of the northwestern part of the country, lives in sheltered positions, but many of the leaves are usually injured by the cold. *M. pinnata* and *M. japonica* generally live here but cannot be recommended for general planting. They can be seen on Hickory Path near Centre Street.

Viburnum rhytidophyllum. This plant attracted a good deal of attention when it was first raised from seeds collected by Wilson in China, but in eastern Massachusetts it is hardy only in sheltered positions and usually suffers more or less every winter. In the neighborhood of Philadelphia, however, it appears to be perfectly hardy and specimens there are already fully ten feet high. It is a large shrub with stout erect branches and tomentose branchlets, and large dark brown leaves lustrous and deeply wrinkled on the upper surface, and covered below with a thick coat of gray or yellowish felt. The flowers are in compact terminal clusters which are formed in the autumn and are conspicuous during the winter, and the fruit is about a third of an inch long, at first bright red when fully grown and finally black and very lustrous. There is a plant of this *Viburnum* on Hickory Path near Centre Street, and another on the upper side of Azalea Path on which the flower-buds can now be seen.

Kalmias. The most generally satisfactory broad-leaved evergreen which can be grown in this part of the country is the Mountain Laurel (*Kalmia latifolia*) which is one of the handsomest plants of the North American flora. There are forms of the Mountain Laurel with white, pink and red flowers and there are some monstrous forms which are more curious than beautiful. Two dwarf species, *Kalmia angustifolia*, the well-known Sheep Laurel of northern pastures, and *K. carolina* from the southern mountains, although not often cultivated, deserve a

place in the garden. *K. polifolia*, or *glauca*, is hardy, but not easy to establish in gardens. The *Kalmias*, like the *Rhododendrons* and all plants of the Heath Family, cannot grow where there is lime in the soil.

Rhododendrons. A large number of the species and hybrids of *Rhododendrons* are now cultivated in California and in some parts of Europe, but only a few of them can be grown in the open ground in the eastern United States, and the region here where any of these plants thrive is not large, for it is too cold for *Rhododendrons* north of Massachusetts and too hot for them south of Pennsylvania except on the slopes of the Appalachian Mountains. Only the species of eastern North America, *R. maximum*, *R. catawbiense*, *R. carolinianum* and *R. minus*, and *R. Smirnowii* of the Caucasus, *R. brachycarpum* of the high mountains of Japan, and *R. micranthum* from western and north central China are perfectly hardy here. This last is a small plant with small leaves and small compact clusters of white flowers and looks more like a *Ledum* than a *Rhododendron*. Of the sixty odd species of Chinese *Rhododendrons* raised at the Arboretum from seed collected by Wilson this is the only one that is perfectly hardy here, although *R. discolor* can be kept alive in sheltered positions at least for a few years. Two little European *Rhododendrons*, *R. ferrugineum* and *R. hirsutum* live here but the plants are generally short-lived and not really satisfactory. Most of the *Rhododendrons* cultivated in this part of the country are hybrids of *R. catawbiense*, but only a very few of the great number of these hybrids which have been raised in Europe are really hardy here. There are hybrids, too, growing in the Arboretum of *R. Metternichii*, of *R. Smirnowii*, of *R. maximum*, of *R. minus* and of the European species which are hardy. There is still much to be accomplished in the gardens of eastern America by the breeders of hardy *Rhododendrons*.

Hollies. *Ilex opaca*, the widely distributed, red-fruited species of eastern North America is the only broad-leaved evergreen which is a tree in this climate. *Ilex opaca* seems able to flourish under the conditions of city life and to be little injured by the smoke from bituminous coal fires which are so injurious to most evergreen plants. That it is a long-lived tree is shown by the specimens planted by Washington about 1785 at Mt. Vernon which are still in perfect health and among the most interesting of the trees planted by him. *Ilex glabra* is another excellent broad-leaved evergreen for the decoration of New England gardens. It is a broad round-topped shrub with small lustrous leaves and small black fruit a good deal hidden by the foliage, and is a native of the coast region from New Hampshire to Texas. A good mass of these shrubs can be seen on the right hand side of the Hemlock Hill Drive opposite the Laurel plantation. Two Japanese evergreen Hollies can be grown here, *Ilex crenata* and *I. pedunculosa*. The former is a small bushy tree or small shrub with small finely toothed leaves and small black fruit borne on such small stems that it is hidden by the leaves. There are forms of this plant with larger and with smaller leaves, and the small-leaved form (var. *microphylla*), on which the leaves are not more than half an inch long, is the hardier. Several

large plants can be seen on Azalea Path. Of *Ilex pedunculosa* there are only small specimens in the Arboretum, where they can be seen on Hickory Path near Centre Street where they have been growing for several years. In Japan this is a small tree sometimes twenty or thirty feet tall, or more often a shrub. The leaves resemble in shape those of our Wild Cherry, and the handsome red fruit is borne on long stalks and is very ornamental.

Andromedas. *Andromeda*, or as it is often called *Pieris floribunda*, is one of the handsomest of the broad-leaved evergreen shrubs which are perfectly hardy in this climate. It is a round-topped shrub occasionally eight or ten feet across and four or five feet high, with small, pointed, dark green leaves, and short terminal clusters of white bell-shaped flowers. The flower-buds, which are fully grown in the autumn, are conspicuous and ornamental during the winter. This southern Appalachian shrub is an old inhabitant of gardens and is still much propagated by nurserymen. The related Japanese species, *Andromeda japonica*, is sometimes a small tree and has more lustrous leaves and larger flowers in larger clusters. The plant is hardy, but the flowers, which open early, are often injured by spring frosts. The so-called Bog Rosemarys, *Andromeda polifolia* and *A. glaucophylla*, although naturally swamp plants, can be grown in dry soil and are attractive small shrubs with small pale leaves and clustered white or pink flowers.

Chamaedaphne calyculata. This, the so-called Leather Leaf, is another native small plant which can be successfully grown in dry ground. The small white flowers are in the axils of the upper leaves and are not very conspicuous, and as an ornamental plant the Leather Leaf is not as attractive as several of the smaller shrubs of the Heath Family. There is also a plant of the dwarf form in the Shrub Collection (var. *minor*).

The Box Huckleberry. Among the easily grown and perfectly hardy evergreen plants of the Heath Family none is perhaps more beautiful than the Box Huckleberry (*Gaylussacia brachycera*) with its small, lustrous leaves which become the color of old Spanish leather in the autumn, small white flowers and blue fruits. The prostrate stems spread into broad mats only a few inches high, and although the plant grows naturally in the shade of Oak woods it thrives in full sunshine. This is one of the rarest plants in North America and is now known to grow naturally in only one place in Pennsylvania.

Blueberries. A few of the evergreen *Vacciniums* can be grown in this climate, including the Cowberry (*V. Vitis-Idaea*) and its variety *minus*, low plants with tufted creeping stems, small pink or white flowers and dark red berries. The two Cranberries, *Vaccinium Oxyccoccus* and *V. macrocarpon*, although inhabitants of swamps, will also grow in dry ground and are beautiful plants.

The only other broad-leaved evergreens which are perfectly hardy here are the Leucothoes, the Bear Berry, the Gaultherias, the Ledums, Leiophyllums, the Pachystimas, *Evonymus radicans* and *Vinca minor*.

The Bulletins for 1917 will now be discontinued.

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